IN THE CLAIMS

Claims 1 - 29 (Cancelled).

30. (New) A method for the identification of tissue/cell specific marker genes comprising

a) taking tissue and/or cells of at least one developmental stage and/or at least one disease state, and/or

cultivating said tissue and/or cells *in vitro* under at least one culture condition,

b) determination of gene expression profiles of said tissue/cells and/or *in vitro* cultivated tissue/cells and

c) identification of specific marker genes by bioinformatic analysis of said gene expression profiles.

31. (New) The method of claim 30, comprising cultivating tissue/cells of at least two different developmental stages and/or disease states *in vitro* under at least two different culture conditions, determination of gene expression profiles of said *in vitro* cultivated tissue/cells and identification of specific marker genes by bioinformatic analysis of said gene expression profiles.

32. (New) The method of claim 30, wherein said tissue/cells are selected from the group consisting of fetal tissue, adolescent tissue, adult tissue, healthy tissue and pathological tissue, progenitor cells like stem cells or cells derived from the same precursor lineage.

33. (New) The method of claim 30, wherein said culture conditions are 2D and 3D *in vitro* cultures.

34. (New) The method of claim 30, wherein said gene expression profiles are determined by a micro-array.

35. (New) The method of claim 30, wherein said bioinformatic analysis is done by software analysis like e.g. SOM or cluster analysis.

36. (New) The method of claim 30, where the tissue is cartilage.

37. (New) A method for the quality control of tissue biopsies and/or cells/tissue cultivated/ produced *in vitro* comprising the steps of: establishing a gene expression profile of said cells or tissue, comparison of said resulting profile with profiles characteristic for a particular status or physiological potential of the examined cells/tissue and determination of the particular status of the examined tissue/cells.

38. (New) The method of claim 37, wherein said profile is a gene expression profile which is determined by means of a micro-array.

39. (New) The method of claim 37, wherein said tissue is cartilage tissue or chondrocytes, preferably derived from arthritic joint tissue (rheumatoid and osteoarthritis), and a micro-array comprises polynucleotide probes of tissue specific marker genes.

40. (New) The method of claim 37, for the assessment whether the tissue biopsy/cell samples can be used for culturing cells *in vitro*, the cultured tissue/cells being suitable for and/or used in the treatment of cartilage defects.

41. (New) The method of claim 37, for the assessment whether certain therapeutic

approaches such as tissue engineering therapy, cell therapy or surgical therapy can be performed.

42. (New) The method of claim 37, for the evaluation of the quality of an in vitro produced implant or of *in vitro* cultivated cells for cell therapy.

43. (New) The method of claim 37, for the use in diagnosis within clinical applications and gene expression profiles used as a diagnostic tool therein, said method comprising assessing patient biopsy/cell samples for functionality, culturing functional cells in an in vitro cell culture to get cultured cells/tissue for the treatment/performance in a cell or tissue based therapy.

44. (New) The method of claim 37, for the use in diagnosis within clinical applications and gene expression profiles used as a diagnostic tool therein, said method comprising assessing patient biopsy/cell samples and deciding on a subsequent therapeutic approach, said approach preferably being selected from the group consisting of tissue engineered therapy, cell therapy, and traditional surgical approach.

45. (New) The method of claim 37, for the use in quality control and gene expression profiles used as a quality control tool therein, said method comprising assessing the quality of human biopsy/cell samples prior to performing a cellular expansion in case of cell therapy and/or prior to performing the differentiation/tissue formation in case of a tissue engineering therapy.

46. (New) The method of claim 37, for the use in quality control and gene expression profiles used as a quality control tool therein, said method comprising assessing the quality of

the final implant prior and/or after product release, said implant being proliferated cells in case of a cell therapy or tissue engineered cartilage in case of a tissue engineered therapeutic approach.

47. (New) A method for the determination of characteristic gene expression profiles for clinical use comprising:

a) determining gene expression profiles of tissue or cell samples in vitro and generating a database containing said gene expression profiles,

b) correlating patient datas e.g. patient history, medication etc. of the tissue or cell sample donor with the gene expression profile of said tissue or cell samples and optionally the clinical outcome after treatment.

48. (New) The method of claim 47, wherein said gene expression profile has been determined by a method for the quality control of tissue biopsies and/or cells/tissue cultivated/ produced *in vitro* comprising the steps of:

establishing a gene expression profile of said cells or tissue, comparison of said resulting profile with profiles characteristic for a particular status or physiological potential of the examined cells/tissue and determination of the particular status of the examined tissue/cells.

49. (New) A cartilage array comprising a plurality of different polynucleotide probe spots stably associated with a solid surface of a carrier, whereby each of said spots is made of a unique polynucleotide that corresponds to one specific cartilage marker gene.

50. (New) The cartilage array of claim 49, comprising at least two spots that have different nucleotide sequences but of the same cartilage marker gene.

51. (New) The cartilage array of claim 49, comprising at least 10 spots of different nucleotide sequences and being indicative of a specific tissue or cell status.

52. (New) The cartilage array of claim 49, comprising spots of different nucleotide sequences and that are indicative for at least two tissue or cell status, preferably 3 status.

53. (New) The cartilage array of claim 49, wherein at least part of the cartilage marker genes is selected from the 467 genes listed in the description, preferably at least 10 %, more preferably at least 50 %, most preferably about 100 %.

54. (New) The cartilage array of claim 49, wherein said different polynucleotides of the array do not cross hybridise under stringent conditions with each other.

55. (New) The cartilage array of claim 49, wherein the status is selected from biopsies and/or 2D cultures and/or 3D cultures of healthy adult, healthy fetal/infant, undesired adult, undesired fetal/infant or progenitor cells like e.g. stem cell or cells derived from the same precursor lineage.

56. (New) The cartilage array of claim 49, wherein the polynucleotide probes have a length of at least 10 nucleotides, preferably at least 25 nucleotides.

57. (New) The cartilage array of claim 49, wherein the carrier is optionally attached to coated glass, nylon or any other material.

58. (New) The cartilage array of claim 49, wherein at least part of the cartilage marker genes are selected from a subgroup of the 467 genes listed in the description, said subgroup

consisting of the most tissue specific 200 genes.

59. (New) The cartilage array of claim 49, which can be used within clinical applications as a diagnostic tool in order to assess patient biopsy/cell samples for targeted in vitro cell culture treatment/performance when performing a cell or tissue based therapy.

60. (New) The cartilage array of claim 49, which can be used within clinical applications as a diagnostic tool in order to asses patient biopsy/cell samples and to decide on subsequent therapeutic approach which maybe a tissue engineered therapy, a cell therapy only, or even a traditional surgical approach only.

61. (New) The cartilage array of claim 49, which can be used as a quality control tool in order to assess the quality of human biopsy/cell samples prior performing the cellular expansion in case of cell therapy and/or prior performing the differentiation/tissue formation in case of a tissue engineered therapy.

62. (New) The cartilage array of claim 49, which can be used as a quality control tool in order to assess the quality of the final implant prior and/or after product release, said implant being proliferated cells in case of a cell therapy or tissue engineered cartilage in case of a tissue engineered therapeutic approach.

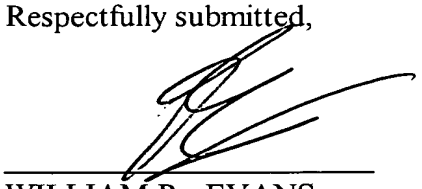
63. (New) A kit for use in a hybridization assay comprising a cartilage array of claim 49.

64. (New) The kit of claim 63, wherein said kit further comprises reagents for generating a labeled target polynucleotide sample, a hybridization buffer and a wash medium.

65. (New) Use of a cartilage array of claim 49, for *in vitro* diagnostic of mammals, in particular humans.

66. (New) Use of a kit of claim 63, for *in vitro* diagnostic of mammals, in particular humans.

Respectfully submitted,



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